

Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Little Sac River

Waterbody Segment at a Glance:

County: Greene and Polk
Nearby Cities: Springfield
Length of impairment: 27 miles
Pollutant: Fecal Coliform
Source: Point and Nonpoint Sources



State map showing location of watershed

TMDL Priority Ranking: Low

Description of the Problem

Beneficial uses of Little Sac River

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health Associated with Fish Consumption
- Cool Water Fishery
- Whole Body Contact Recreation (Swimming)
- Boating and Canoeing

Use that is Impaired

- Whole Body Contact Recreation (Swimming)

Standards that Apply

Missouri's Water Quality Standards at 10 CSR 20-7.031(4)(C) state that the fecal coliform count shall not exceed 200 colonies per 100 milliliters (200 col/100 ml) during the recreational season (April 1-October 31) in waters designated for whole-body contact recreation. Federal guidelines also suggest rating waters as impaired if more than 10 percent of all samples exceed 400 bacterial colonies/100 ml or if there are any closures of swimming areas due to high bacteria levels. The Missouri Water Quality Standards have been revised and the new regulation will take effect Dec. 31, 2005. All streams must meet the E coli standard for whole body contact after Dec. 31, 2008. The new standard is 126 colonies/100 milliliters.

Background Information and Water Quality Data

The Little Sac River is a tributary of Stockton Lake within the Osage River Basin. The river begins at the north edge of Springfield and flows through Fellows Lake and McDaniel Lake. Much of its flow below the lakes is treated effluent from the Springfield Northwest Wastewater Treatment Plant (WWTP).

The shallow aquifer and karst terrain of sinkholes, springs and caves contribute groundwater to the Little Sac River. Contamination of groundwater from urban spills, rural and urban storm water runoff, livestock in streams, wildlife and pets, leaking sewers and septic tanks contamination, all may contribute significantly to problems in the Little Sac River.

In 2004, Food and Agricultural Research Institute (FAPRI), which is a research effort by the University of Missouri, conducted a study to find the source of fecal contamination to the Little Sac River. Using DNA tracking they found that wildlife, particularly geese, were a large contributor to the contamination of the river. Bacterial contamination from springs is also a significant contributor. Human fecal contamination was present, but not in amounts as high as originally expected. Also, livestock fecal contamination levels were not as high as expected. A presentation of the results of this study can be seen at www.fapri.missouri.edu/outreach/presentations/2005/February4.pdf. The final report for this study (FAPRI-UMC Report #07-05) was written as a TMDL and is being used by Missouri for the Little Sac River TMDL. The U.S. Environmental Protection Agency approved this TMDL on August 9, 2006.

Best management practices to reduce the geese populations and storm water runoff in rural and urban areas can reduce bacteria loading. Identifying illegal wastewater discharges, leaks and septic tank discharges may also reduce bacteria. However, identifying the source of pollution to springs is necessary to reduce bacterial contamination in the Little Sac.

The tables of data (below) and the graph and map that follow were prepared by FAPRI and are part of FAPRI –UMC Report #07-05 (Claire Baffaut).

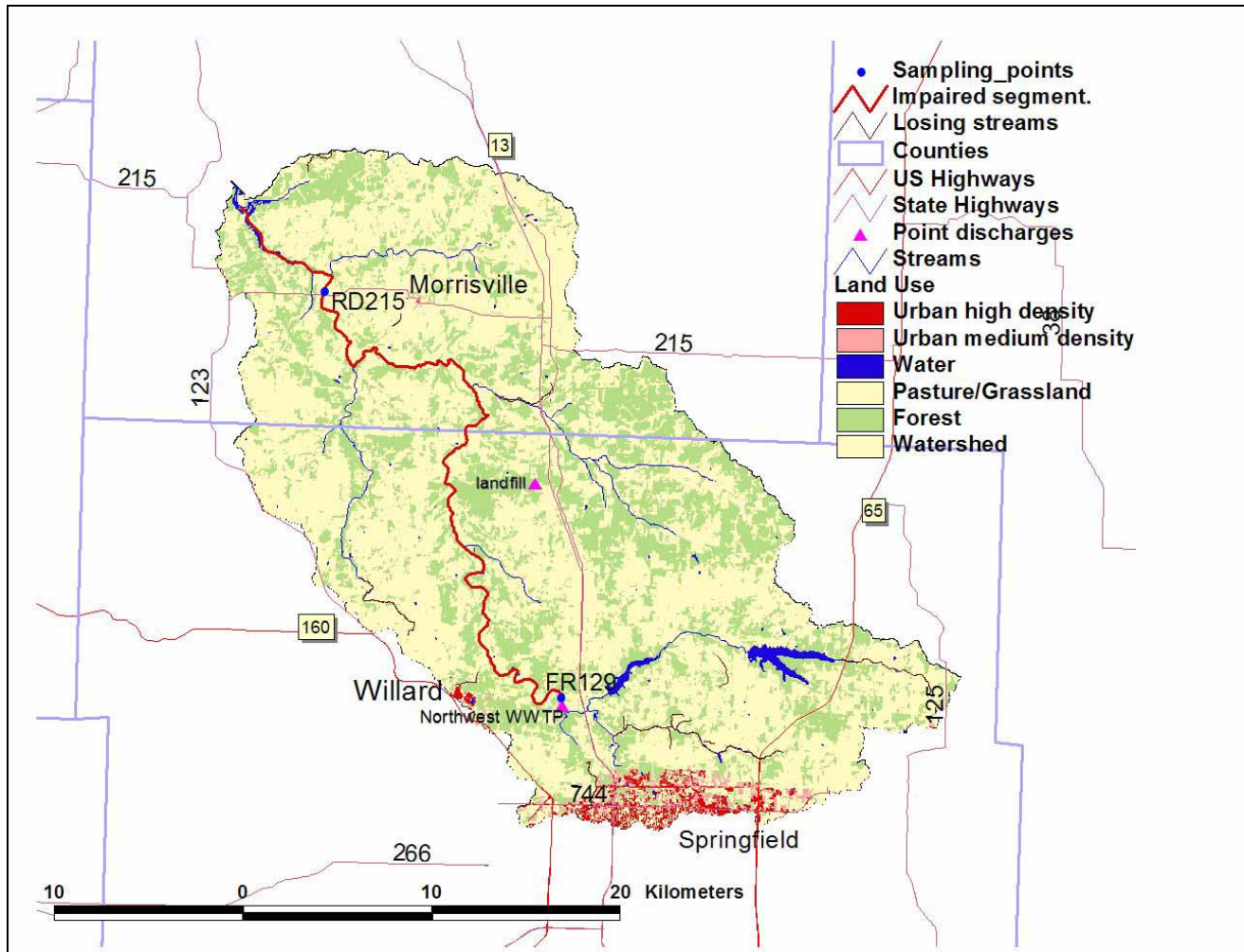
Table 1. Fecal coliform concentrations in the Little Sac River at Farm Road 129

	November to mid-March	Mid-March to mid-June	Mid-June to mid-August	Mid-August to October
Maximum	12000	2700	850	14800
Min	90	85	160	210
Mean	2632	478	456	2089
Std deviation	4642	676	275	4249
Geometric mean	797	314	383	951

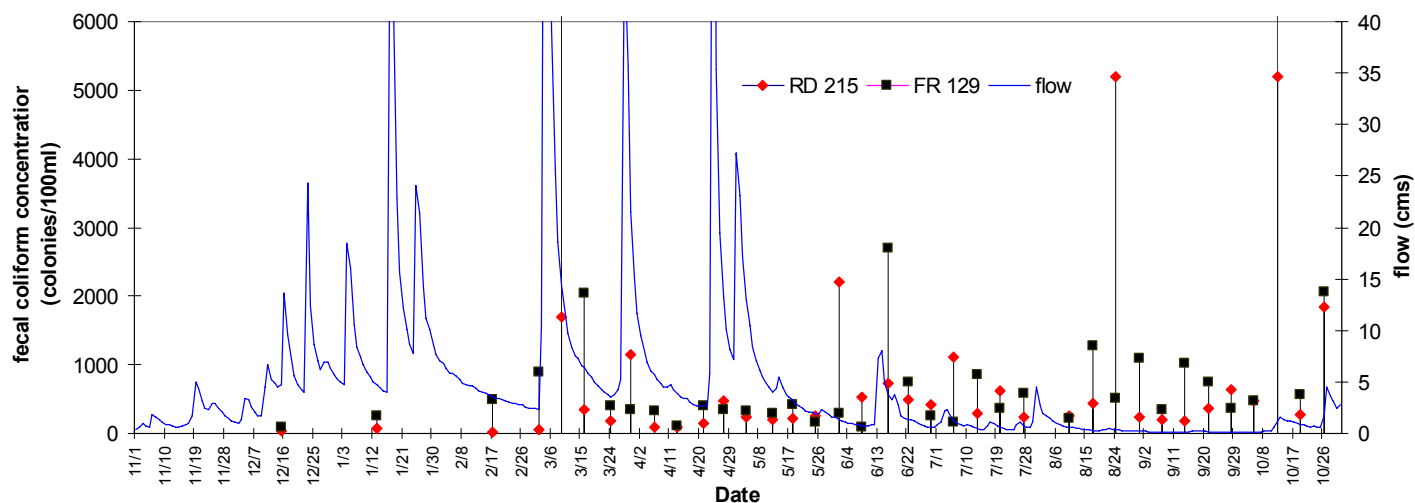
Table 2. Fecal coliform concentrations in the Little Sac River at Road 215

	November to mid-March	Mid-March to mid-June	Mid-June to mid-August	Mid-August to October
Maximum	1700	2200	1120	5200
Min	11	84	230	180
Mean	369	500	490	1368
Std deviation	663	592	312	1951
Geometric mean	99	312	423	625

Upper Little Sac River watershed in Greene and Polk counties, Missouri, showing the location of the sampling points, RD215 and RD 129



Weekly fecal and *E. coli* concentrations in Little Sac River



For more information call or write:

Missouri Department of Natural Resources

Water Protection Program

P.O. Box 176, Jefferson City, MO 65102-0176

1-800-361-4827 or (573) 751-1300 office

(573) 522-9920 fax

Program Home Page: <http://www.dnr.mo.gov/env/wpp/wp-index.html>